CLAIMS

What is claimed is:

1. A method for calibrating a filter, the method comprises:

filtering, by the filter, a first signal having a first frequency to produce a first filtered signal, wherein the first frequency is in a known pass region of the filter;

measuring signal strength of the first filtered signal to produce a first measured signal strength,

filtering, by the filter, a second signal having a second frequency to produce a second filtered signal, wherein the second frequency is at a desired corner frequency of the filter;

measuring signal strength of the second filtered signal to produce a second measured signal strength;

comparing the first measured signal strength with the second measured signal strength to determine whether the filter has attenuated the second signal by a desired attenuation value with respect to the first signal; and

when the filter has not attenuated the second signal by the desired attenuation value with respect to the first signal, adjusting filter response of the filter to produce an adjusted filter response.

2. The method of claim 1, wherein the adjusting the filter response further comprises:

incrementally adjusting a time-constant of the filter corresponding to the corner frequency to produce the adjusted filter response;

filtering, in accordance with the adjusted filter response. the second signal to produce a subsequent second filtered signal;

measuring signal strength of the subsequent second filtered signal to produce a subsequent second signal strength;

comparing the first measured signal strength with the subsequent second measured signal strength to determined whether the filtered has attenuated the second signal by the desired attenuation; and

when the filter has not attenuated the second signal by a desired attenuation value with respect to the first signal, repeating the incrementally adjusting, the filtering. the measuring, and the comparing until the filter has attenuated the second signal by the desired attenuation value.

3. The method of claim 1, wherein the filter further comprises at least one of:

a low pass filter; and

a high pass filter.

4. The method of claim 1, wherein the filter further comprises at least one of:

a band pass filter; and

a stop band filter.

5. The method of claim 4 further comprises:

filtering, by the filter, a third signal having a third frequency to produce a third filtered signal, wherein the third frequency is at a second desired corner frequency of the filter:

measuring signal strength of the third filtered signal to produce a third measured signal strength;

comparing the first measured signal strength with the third measured signal strength to determine whether the filter has attenuated the third signal by a second desired attenuation value with respect to the first signal; and

when the filter has not attenuated the third signal by the second desired attenuation value with respect to the first signal, adjusting filter response of the filter to produce an adjusted filter response.

6. The method of claim 1, wherein the measuring of the signal strength of the first and second signals further comprises at least one of:

determining magnitude of the first and second signals to produce the first and second signal strengths, respectively;

determining a square of the magnitude of the first and second signals to produce the first and second signal strengths, respectively;

determining a power level of the first and second signals to produce the first and second signal strengths, respectively; and

determining a received signal strength indication of the first and second signals to produce the first and second signal strengths, respectively.

7. The method of claim 1, wherein the adjusting the filter response further comprises:

determining an actual attenuation value based on the first and second signal strengths:

comparing the desired attenuation value to the actual attenuation value to determined an attenuation error; and

adjusting the filter response based on the attenuation error.

8. A method for calibrating a receiver low pass filter, the method comprises:

setting filter response of the receiver low pass filter to an initial state;

filtering, by the receiver low pass filter, a first signal having a first frequency to produce a first filtered signal, wherein the first frequency is in a known pass region of the filter;

measuring signal strength of the first filtered signal to produce a first measured signal strength,

filtering, by the receiver low pass filter, a second signal having a second frequency to produce a second filtered signal, wherein the second frequency is at a desired corner frequency of the filter;

measuring signal strength of the second filtered signal to produce a second measured signal strength;

comparing the first measured signal strength with the second measured signal strength to determine whether the filter has attenuated the second signal by a desired attenuation value with respect to the first signal; and

when the filter has not attenuated the second signal by the desired attenuation value with respect to the first signal, adjusting filter response of the receiver low pass filter to produce an adjusted filter response.

9. The method of claim 1, wherein the filtering the first signal further comprises:

setting a transmit power level of a transmitter section to a nominal calibration power level;

enabling a receiver section, wherein the receiver section includes the receiver low pass filter;

enabling, subsequent to enabling the receiver section, the transmitter section; and

transmitting, by the transmitter section at the nominal calibration power level, the first signal to the receiver section.

10. The method of claim 9, wherein the filtering the second signal further comprises:

transmitting, by the transmitter section at the nominal calibration power level, the second signal to the receiver section.

11. The method of claim 8, wherein the adjusting the receiver low pass filter response further comprises:

incrementally adjusting a time-constant of the receiver low pass filter corresponding to the corner frequency to produce the adjusted filter response;

filtering, in accordance with the adjusted filter response, the second signal to produce a subsequent second filtered signal;

measuring signal strength of the subsequent second filtered signal to produce a subsequent second signal strength;

comparing the first measured signal strength with the subsequent second measured signal strength to determine whether the receiver low pass filter has attenuated the second signal by the desired attenuation; and

when the receiver low pass filter has not attenuated the second signal by a desired attenuation value with respect to the first signal, repeating the incrementally adjusting.

the filtering, the measuring, and the comparing until the receiver low pass filter has attenuated the second signal by the desired attenuation value.

12. The method of claim 8, wherein the measuring of the signal strength of the first and second signals further comprises at least one of:

determining in-phase component and quadrature component magnitudes of the first and second signals to produce the first and second signal strengths, respectively;

determining a square of the magnitudes of the in-phase and quadrature components of the first and second signals to produce the first and second signal strengths, respectively;

determining a power level of the in-phase and quadrature components of the first and second signals to produce the first and second signal strengths, respectively;

determining a received signal strength indication of the in-phase and quadrature components of the first and second signals to produce the first and second signal strengths, respectively.

13. The method of claim 8, wherein the adjusting the receiver low pass filter response further comprises:

determining an actual attenuation value based on the first and second signal strengths;

comparing the desired attenuation value to the actual attenuation value to determined an attenuation error; and

adjusting the filter response based on the attenuation error.

14. A calibrating filter comprises:

filtering circuit operable to substantially pass received signals having a frequency in a pass region and to attenuate received signals having a frequency outside the pass region; and

calibration module operably coupled to the filtering circuit, wherein the calibration module:

measures signal strength of a first filtered signal to produce a first measured signal strength, wherein the filtering circuit produces the first filtered signal by filtering a signal having a first frequency, wherein the first frequency is within the pass region;

measures signal strength of a second filtered signal to produce a second measured signal strength, wherein the filtering circuit produces the second filtered signal by filtering a signal having a second frequency, wherein the second frequency is at a desired corner frequency of the filter:

compares the first measured signal strength with the second measured signal strength to determine whether the filtering circuit has attenuated the second signal by a desired attenuation value with respect to the first signal; and

when the filtering circuit has not attenuated the second signal by the desired attenuation value with respect to the first signal, adjusting filter response of the filtering circuit to produce an adjusted filter response.

15. The calibrating filter of claim 14, wherein the adjusting the filter response further comprises:

incrementally adjusting a time-constant of the filter corresponding to the corner frequency to produce the adjusted filter response;

filtering, in accordance with the adjusted filter response, the second signal to produce a subsequent second filtered signal;

measuring signal strength of the subsequent second filtered signal to produce a subsequent second signal strength;

comparing the first measured signal strength with the subsequent second measured signal strength to determine whether the filtering circuit has attenuated the second signal by the desired attenuation; and

when the filtering circuit has not attenuated the second signal by a desired attenuation value with respect to the first signal, repeating the incrementally adjusting, the filtering, the measuring, and the comparing until the filtering circuit has attenuated the second signal by the desired attenuation value.

16. The calibrating filter of claim 14, wherein the filtering circuit further comprises at least one of:

low pass filtering circuit; and

high pass filtering circuit.

17. The calibrating filter of claim 14, wherein the filtering circuit further comprises at least one of:

band pass filtering circuit; and

stop band filtering circuit.

18. The calibrating filter of claim 17, wherein the calibration module further functions to:

measure signal strength of a third filtered signal to produce a third measured signal strength, wherein the filtering circuit filters a signal having a third frequency to produce the third filtered signal, wherein the third frequency is at a second desired corner frequency of the filtering circuit;

compare the first measured signal strength with the third measured signal strength to determine whether the filtering circuit has attenuated the third signal by a second desired attenuation value with respect to the first signal; and

when the filtering circuit has not attenuated the third signal by the second desired attenuation value with respect to the first signal, adjust filter response of the filtering circuit to produce an adjusted filter response.

19. The calibrating filter of claim 14, wherein the measuring of the signal strength of the first and second signals further comprises at least one of:

determining magnitude of the first and second signals to produce the first and second signal strengths, respectively;

determining a square of the magnitude of the first and second signals to produce the first and second signal strengths, respectively:

determining a power level of the first and second signals to produce the first and second signal strengths, respectively; and

determining a received signal strength indication of the first and second signals to produce the first and second signal strengths, respectively.

20. The calibrating filter of claim 14, wherein the adjusting the filter response further comprises:

determining an actual attenuation value based on the first and second signal strengths;

comparing the desired attenuation value to the actual attenuation value to determined an attenuation error; and

adjusting the filter response based on the attenuation error.

21. A radio frequency integrated circuit comprises:

a transmitter section operably coupled to convert outbound baseband data into outbound radio frequency (RF) signals; and

a receiver section operably coupled to convert inbound radio frequency (RF) signals into inbound baseband data, wherein the receiver section includes a low pass filter that includes:

low pass filtering circuit operable to substantially pass analog low intermediate frequency (IF) signals having a frequency in a pass region and to attenuate analog low IF signals having a frequency outside the pass region; and

calibration module operably coupled to the low pass filtering circuit, wherein the calibration module:

measures signal strength of a first filtered signal to produce a first measured signal strength, wherein the low pass filtering circuit produces the first filtered signal by filtering a signal having a first frequency, wherein the first frequency is within the pass region;

measures signal strength of a second filtered signal to produce a second measured signal strength, wherein the low pass filtering circuit produces the second filtered signal by filtering a signal having a second frequency, wherein the second frequency is at a desired corner frequency of the filter;

compares the first measured signal strength with the second measured signal strength to determine whether the filter has attenuated the second signal by a desired attenuation value with respect to the first signal; and

when the low pass filtering circuit has not attenuated the second signal by the desired attenuation value with respect to the first signal, adjusting filter response of the low pass filtering circuit to produce an adjusted filter response.

22. The radio frequency integrated circuit of claim 21, wherein the filtering the first signal further comprises:

setting a transmit power level of the transmitter section to a nominal calibration power level;

enabling the receiver section;

enabling, subsequent to enabling the receiver section, the transmitter section; and

transmitting, by the transmitter section at the nominal calibration power level, the first signal to the receiver section.

23. The radio frequency integrated circuit of claim 22, wherein the filtering the second signal further comprises:

transmitting, by the transmitter section at the nominal calibration power level, the second signal to the receiver section.

24. The radio frequency integrated circuit of claim 21, wherein the adjusting the low pass filter response further comprises:

incrementally adjusting a time-constant of the low pass filter corresponding to the corner frequency to produce the adjusted filter response;

filtering, in accordance with the adjusted filter response, the second signal to produce a subsequent second filtered signal;

measuring signal strength of the subsequent second filtered signal to produce a subsequent second signal strength;

comparing the first measured signal strength with the subsequent second measured signal strength to determined whether the filtered has attenuated the second signal by the desired attenuation; and

when the low pass filter has not attenuated the second signal by a desired attenuation value with respect to the first signal, repeating the incrementally adjusting, the filtering, the measuring, and the comparing until the low pass filter has attenuated the second signal by the desired attenuation value.

25. The radio frequency integrated circuit of claim 21, wherein the measuring of the signal strength of the first and second signals further comprises at least one of:

determining in-phase component and quadrature component magnitudes of the first and second signals to produce the first and second signal strengths, respectively;

determining a square of the magnitudes of the in-phase and quadrature components of the first and second signals to produce the first and second signal strengths, respectively;

determining a power level of the in-phase and quadrature components of the first and second signals to produce the first and second signal strengths, respectively;

determining a received signal strength indication of the in-phase and quadrature components of the first and second signals to produce the first and second signal strengths, respectively.

26. The radio frequency integrated circuit of claim 21, wherein the adjusting the receiver low pass filter response further comprises:

determining an actual attenuation value based on the first and second signal strengths:

comparing the desired attenuation value to the actual attenuation value to determined an attenuation error; and

adjusting the filter response based on the attenuation error.